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(54) Vehicle Anti-Theft Locking
Arrangement

(57) An anti-theft locking arrangement for motor vehicles has lockable means for the driver's controls to disable the transmission of power to the road wheels, either by acting on the clutch or the brakes or both. A two part

locking arrangement has a first part permanently secured to the floor or steering column and a second part movable with regard to the first part to be lockable in a position where it interferes with the operation of the clutch and/or brake pedals either by locking them up or down. A microswitch may also be wired in to the ignition or other electrical circuits.

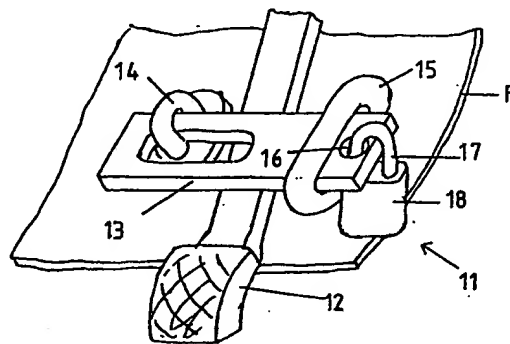
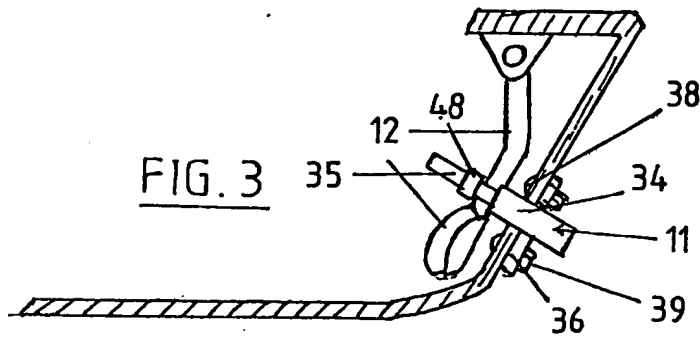
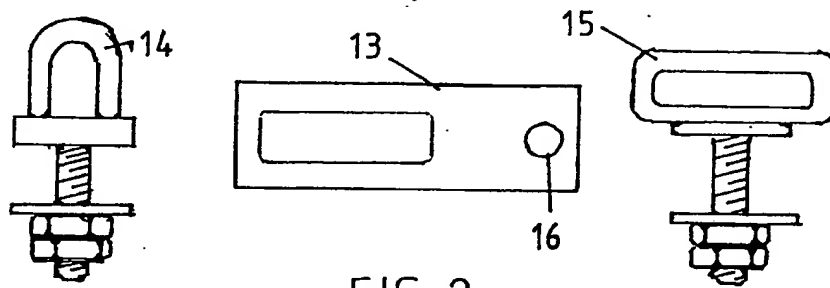
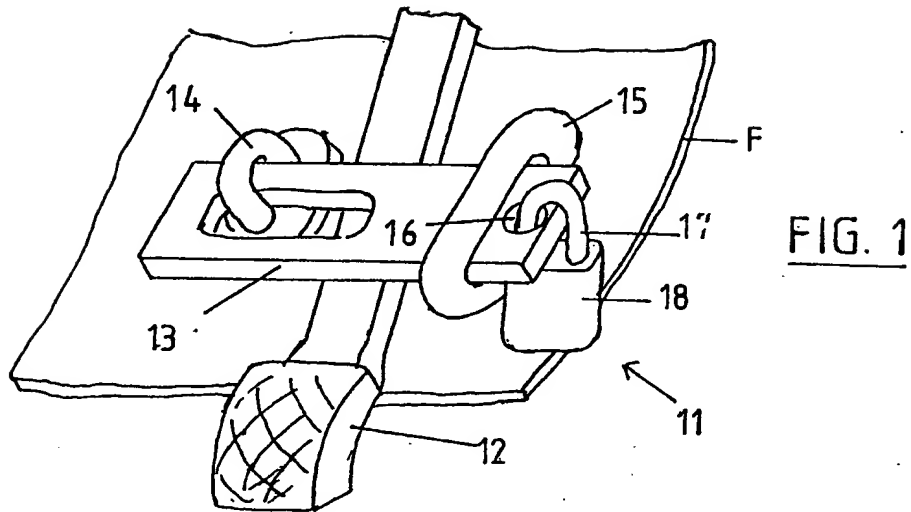


FIG. 1

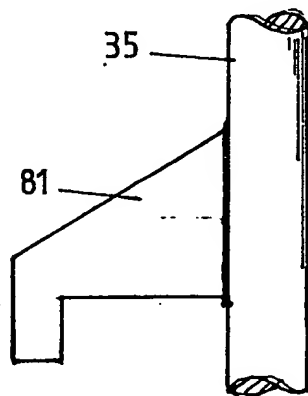
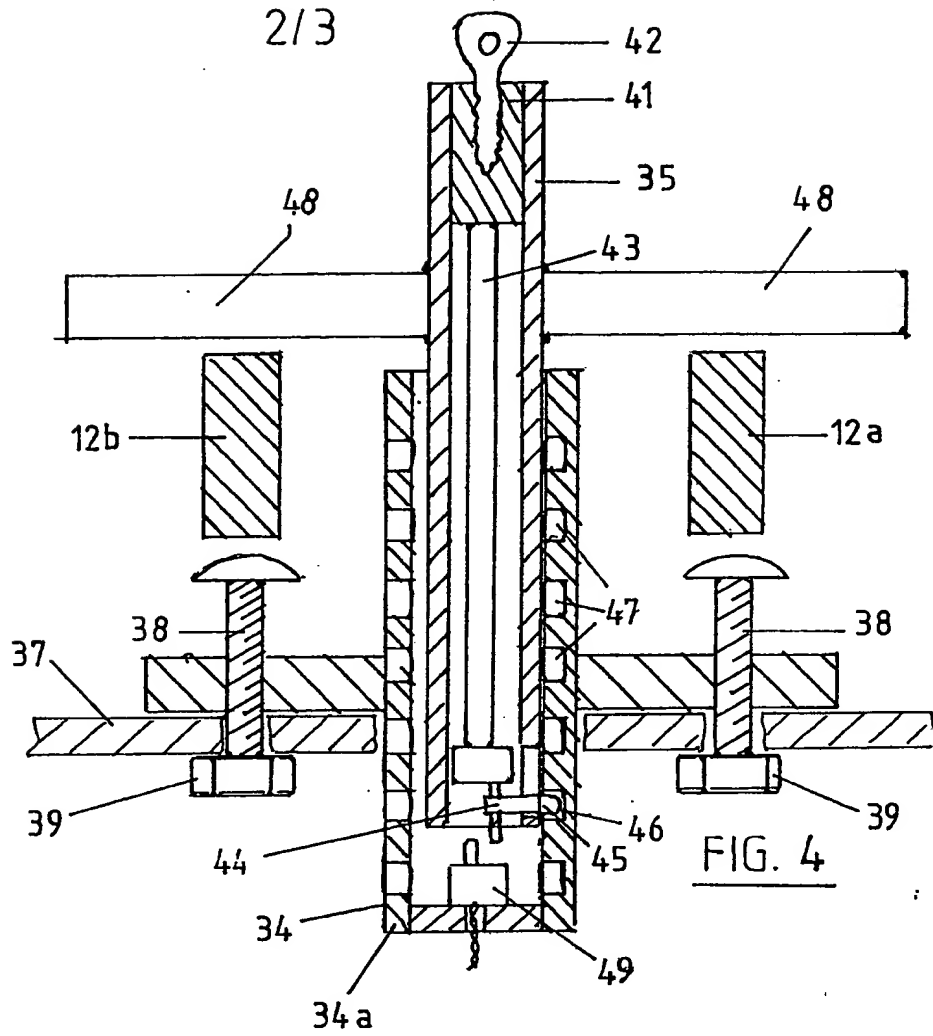
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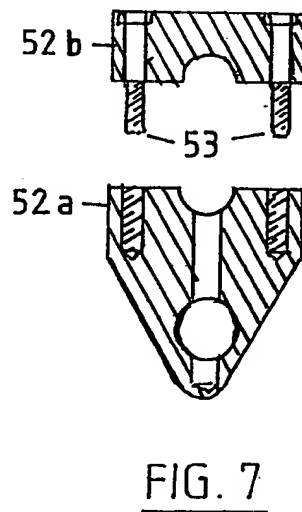
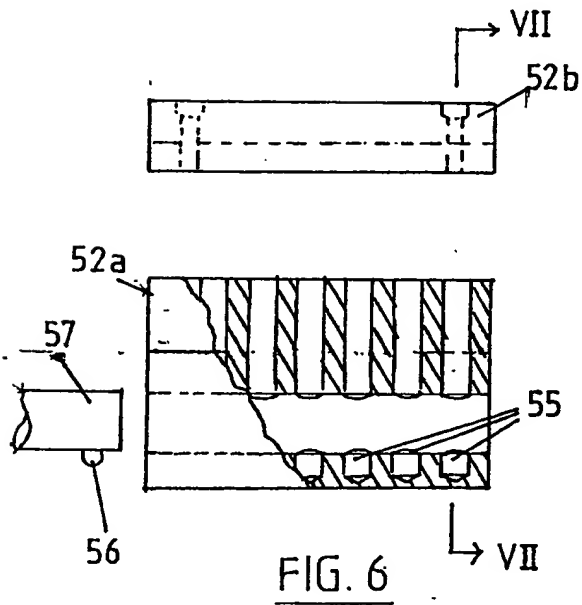
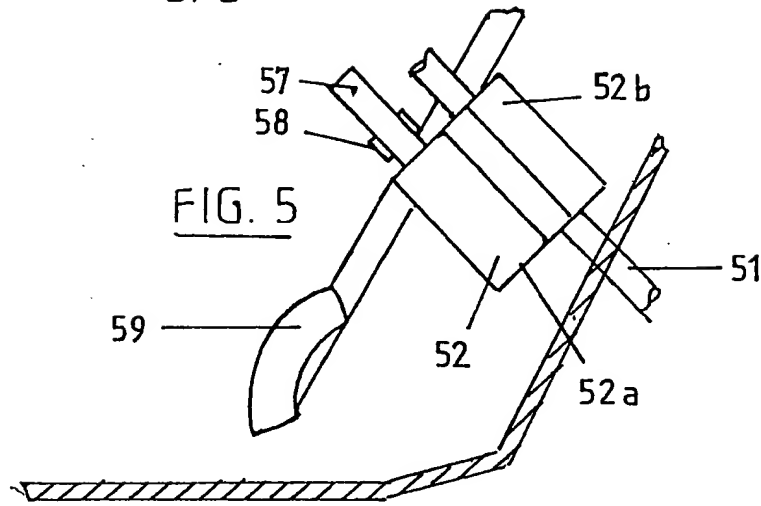
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SPECIFICATION

Vehicle Anti-Theft Locking Arrangement

This invention relates to motor vehicle anti-theft locking arrangements.

Conventionally, motor vehicles are secured against theft by door locks and ignition locks. Often, the same key operates both doors and ignition. Some time ago, a steering wheel lock was made available for fitting to existing automobiles, comprising a hooked rod lockable to a fixing point on the vehicle floor. More recently, it has become common to include a steering wheel locking arrangement in with the ignition lock which is mounted on the steering column for that reason.

Despite these precautions—as well as other measures such as alarms and electronic disabling devices adapted for fitting to motor vehicles—vehicles still get stolen.

“Professional” vehicle thieves are usually equipped with master keys. One such key is usually sufficient to unlock the door, ignition and steering column locks of a vehicle, and a fairly small bunch of keys will give access to most vehicles on the roads. Even if a vehicle is fitted with a hooked-rod type steering wheel lock such as is described in Patent Specifications 1,007,711 and 1,039,980, this does not prevent the vehicle being moved for a short distance to a place where the hooked rod can be sawn through or bent, which in any event is not a difficult or time-consuming task for a well equipped thief.

The present invention provides means for further securing motor vehicles against theft that disable the vehicle more effectly than the steering wheel lock and that are more difficult and time-consuming for unauthorised persons to remove, yet which are inexpensive to manufacture, and simple to fit and to use.

The invention comprises a motor vehicle anti-theft locking arrangement, characterised by lockable means for the driver's controls to disable the transmission of power to the road wheels.

Said lockable means may be adapted to act on the brake pedal or on the clutch pedal, or both.

Said lockable means may comprise a first part adapted for permanent fixture to the vehicle and a second, movable part adapted to be located to the first part in a position where it interferes with the driver's controls. Said first part may be adapted to be bolted to the vehicle floor adjacent driver's control pedals, or adapted to be secured to the vehicle's steering column.

Said first part may be adapted for permanent fixture to the vehicle by means of bolts, screws or like threaded members that are adapted (as by shear-off heads or otherwise) to deny removal.

Said second part may be slidable in said first part into a position where it interferes with the driver's controls. Said second part may telescope with regard to said first part or may rotate with regard to said first part so as to bring an abutment into a position where it interferes with the driver's controls.

Said second part may comprise a shaft having intermediate its ends a laterally projecting abutment adapted to interfere with the driver's controls, a withdrawable pin at one end adapted to be extended laterally from said shaft to engage a corresponding abutment of said first part and a lock mechanism at the other end adapted to extend or withdraw said pin to lock or release said second part with regard to said first part.

Thus the locking arrangement can comprise either a separable second shaft member that is inserted into a permanently secured socket member when it is desired to lock the vehicle and locked therein, or the second member can be permanently mounted in the first socket member and simply rotated between freeing and locking positions, being locked in either position as required.

Additional anti-theft means may be incorporated if desired, such for example as switch means adapted to be wired in to the ignition or other electric circuits of the vehicle. The switch means may be concealed in the locking arrangement so as to be simultaneously actuated to break the ignition circuit and rendered inaccessible when the locking arrangement is operated.

Anti-theft locking arrangements for motor vehicles in accordance with the invention will now be described with reference to the accompanying drawings in which:—

Figure 1 is a perspective view of one arrangement locking a brake or clutch pedal,

Figure 2 is an 'exploded' view of the components of the arrangement shown in Figure 1,

Figure 3 is a side elevation of another arrangement installed in a vehicle,

Figure 4 is a part sectional elevation of the arrangement shown in Figure 3,

Figure 5 is a side elevation of a third arrangement installed in a vehicle,

Figure 6 is a part sectional side elevation of the arrangement shown in Figure 5,

Figure 7 is a cross-section on the line VII—VII of Figure 6 and

Figure 8 is an elevation of a detail.

The motor vehicle anti-theft locking arrangements shown in the drawings comprise lockable means 11 for the driver's controls—a clutch or brake pedal 12—to disable the transmission of power to the road wheels.

The lockable means 11 shown in Figures 1 and 2 constitute a very simple arrangement in which a bar 13 of steel or other strong material difficult to break or saw through is loosely pivoted at one end to a ring 14 bolted in the floor of the vehicle. At its other end the bar 13 is insertable in another ring 15, also bolted to the floor 14 of the vehicle. At this end, the bar 13 has a hole 16 for insertion of the link 17 of a padlock 18, which, when in position and locked, prevents removal of the bar 13. In use, the clutch or brake pedal 12 (both clutch and brake pedals) would be depressed so as to disconnect the engine from the road wheels,

or to brake the road wheels so as to disable or render ineffective the transmission of power to the road wheels. Then the bar 13 would be inserted in the ring 15 and the padlock inserted in the hole 16 to prevent withdrawal of the bar 13. If desired, the clutch pedal can be locked up instead of locked down, making it very difficult to start the vehicle and change gear.

Figures 3 and 4 show another anti-theft arrangement in which the lockable means 11 works on a clutch pedal 12a and a brake pedal 12b and comprise a pair of members 34, 35 of which shaft member 35 fits telescopically into tubular or socket member 34. The latter is provided with a lug or bracket 36 by which it is secured to the floor 37 of the vehicle by means of coach bolts 38 and nuts 39. The bolts are preferably sawn off and flattened to make removal difficult.

Member 35 has a lock 41 turnable by a key 42 so as to turn a rod 43 extending down inside the hollow shaft member 35. At its free end, the rod 43 has an eccentric or cam arrangement 44 that moves a locking pin 45. The pin 45 has a rounded end 46 that fits into any one of a number of blind apertures 47 drilled into the interior side wall of the member 34 so that the members 34, 35 can be locked together in any of a number of positions corresponding to the positions of the apertures 47. The blind apertures 47 are made by drilling first through the diametrically opposed part 34a of the wall of the socket member 34.

The member 35 has a cross-bar or hook part 48. In use, the pedals 12a, 12b or either of them would be depressed to the floor 37 and the shaft member 35 inserted into the socket member 34 and pushed home so that the cross-bar or hook part 48 abuts the pedals 12a, 12b as desired. The key is then turned in the lock 41 so that the locking pin 45 engages in an adjacent blind aperture 47 preventing relative movement of the telescoping members 34, 35.

The members 34, 35 may be of any desired cross-section, which may be circular for ease of manufacture and fitting provided that the locking pin is sufficiently strong, or other measures are taken (for instance the provision of a spline) to prevent the possibility of removal after relative rotation.

When not in use, the member 35 may conveniently be stored away in the glove compartment or a seat pocket of the vehicle. A plastic plug can be provided to close off the open end of the socket member 35 to prevent ingress of foreign matter that might interfere with the proper fitting and locking of the member 35.

In an alternative arrangement (not shown) socket and movable members are provided basically like the members 34, 35 just described, but the shaft member 35 is adapted to remain always seated in the socket member 34 and to be rotated between locking and releasing positions. If only a one-sided hook part is provided to engage, say, the clutch pedal, the socket member can be secured to the vehicle adjacent the clutch

pedal in such a position that when the shaft member is rotated to its releasing position—and secured there by the pin engaging in an appropriate blind hole in the internal wall of the socket member—it is completely out of the way and does not interfere at all with the driver's operation of the pedals. In this case, there will, of course, be only two blind holes in the interior wall of the socket member, at the same axial position but spaced apart angularly, say by about 90° so that the hook member can be swung into and out of engagement with the depressed clutch pedal.

Figures 5 to 7 show yet another embodiment of an anti-theft locking arrangement according to the invention. It is found that some motor vehicles the steering column 51 (Figure 5) is exposed and in a suitable position to serve as a secure mounting for the socket member 52. The socket member 52 is made in two parts—a main part 52a and a clamp member 52b that fit around the steering column 51 and are secured together thereon by bolts 53 (see Figure 3) which have shear-off heads and which engage in blind tapped holes in the main part 52a. The socket member 52 has a series of blind holes 55 as before into which the pin 56 of the shaft member 57 can engage so that the hook part 58 that projects laterally from the shaft member 57 can be locked in such a position that the clutch pedal 59 that it engages is rendered inoperative.

Figure 4 shows a microswitch 49 inside the socket member 34 that is actuated by a detent on the end of the rod 43. The microswitch can be wired into the vehicle so as to open the ignition circuit when the microswitch is actuated by the insertion and locking of the member 35, and preferably so that only side and tail or parking and courtesy light circuits are in operation when the device is locked.

The arrangement will be manufactured from suitably tough materials and preferably of steel given a suitable hardening treatment to resist attack by sawing, filing and so on. Although different arrangements may be produced with the same basic ideas in mind, attention should be paid to details to render it less easy for even an experienced and determined thief to deal with the arrangement. Figure 8 shows one such detail, namely the form of the hook 81 which engages the pedal. This hook 81 is formed as a web of stout sheet metal to resist bending or sawing and generally to strengthen the arrangement. It is welded to the shaft member 35. The web tapers for ease of handling, and so as not to cause a hazard to the shins when in place and also to make it difficult to start a saw cut.

Some cars have a parking brake pedal (instead of the handbrake) and the arrangements described can be applied to the parking brake pedal equally as to the "working" brake pedal.

It is less to be expected that even a well equipped thief will have keys that will open the car door and operate the ignition as well as unlock the arrangements herein described, especially if only a limited number of locks of any one type are

fitted. The nature and position of the locking arrangements, namely down by the control pedals, means that working space is restricted so that the locks cannot easily be picked or the metal bent or sawn.

Although it is anticipated that kits could be sold to fit to existing vehicles, nevertheless it may be that motor vehicle manufacturers will wish to make the parts that are permanently secured to the vehicle an integral part of the vehicle during manufacture, and either provide a suitable shaft member or other part, or leave it to the purchaser of the vehicle to buy a proprietary shaft or other locking member.

Many refinements can be added to the arrangement—for example, a microswitch might also be wired in to an alarm system so that removal or attempted removal of the locking means or any operation of the vehicle or attempted movement thereof without proper unlocking of the arrangement triggers the alarm. Also, in order to make a "universal" arrangement that is adaptable to fit a number of different vehicles, an articulated connection can be made in the member 34 of Figures 3 and 4 between the part that is secured to floor of the vehicle and the part that receives the shaft member 35 so that the latter can be adjusted to a position to suit the particular arrangement of pedals and floor in any of a range of vehicles. The connection can, after adjustment, be made permanently or releasably lockable in such position. For the same purpose the cross-bar or hook part 48 of the member 35 of Figures 3 and 4 or the member 81 of Figure 8 might, instead of being welded on or made integrally with the member 35, be adjustably mounted, for example in a slot securable with a pin. The pin could be of a type impossible to remove, once inserted, or it could be removable only when the member 35 is not locked in position in the member 34.

It should also be noted that the arrangement could equally well be fitted to the accelerator pedal, where it would also effectively disable the transmission of power to the road wheels.

Claims

1. A motor vehicle anti-theft locking arrangement, characterised by lockable means for the driver's controls to disable the transmission of power to the road wheels.

2. A locking arrangement according to Claim 1, characterised in that said lockable means are

adapted to act on the brake pedal.

3. A locking arrangement according to Claim 1 or Claim 2, characterised in that said lockable means are adapted to act on the clutch pedal.

4. A locking arrangement according to any one of Claims 1 to 3, characterised in that said lockable means comprise a first part adapted for permanent fixture to the vehicle and a second movable part adapted to be locked to the first part in a position where it interferes with the driver's controls.

5. A locking arrangement according to Claim 4, characterised in that said first part is adapted to be bolted to the vehicle floor adjacent driver's control pedals.

6. A locking arrangement according to Claim 4, characterised in that said first part is adapted to be secured to the vehicle's steering column.

7. A locking arrangement according to any one of Claims 4 to 6, characterised in that said first part is adapted for permanent fixture to the vehicle by means of bolts, screws or like threaded members that are adapted (as by shear-off heads or otherwise) to deny removal.

8. A locking arrangement according to any one of Claims 4 to 7, characterised in that said second part is slidable in said first part into a position where it interferes with the driver's controls.

9. A locking arrangement according to Claim 8, characterised in that the said second part telescopes with regard to said first part.

10. A locking arrangement according to Claim 8 or Claim 9, characterised in that said second part rotates with regard to said first part so as to bring an abutment into a position where it interferes with the driver's controls.

11. A locking arrangement according to any one of Claims 4 to 10, characterised in that said second part comprises a shaft having intermediate its ends a laterally projecting abutment adapted to interfere with the driver's controls, a withdrawable pin at one end adapted to be extended laterally from said shaft to engage a corresponding abutment of said first part and a lock mechanism at the other end adapted to extend or withdraw said pin to lock or release said second part with regard to said first part.

12. A locking arrangement according to any one of Claims 1 to 11, characterised in that said lockable means comprises switch means adapted to be wired in to the ignition or other electric circuits of the vehicle.